

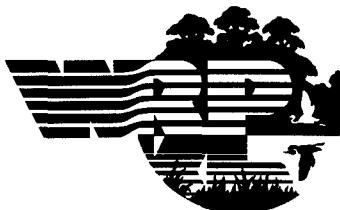


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## The Wetlands Research Program

# Bulletin

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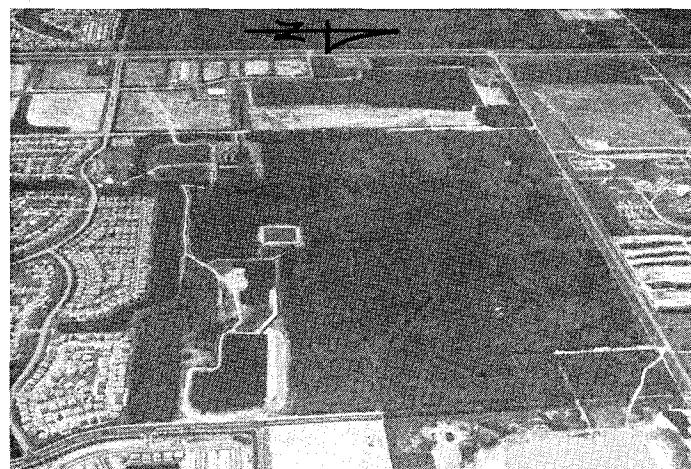
## Wetland mitigation banking: Entering a new era?

by Dr. Robert W. Brumbaugh, U.S. Army Corps of Engineers Institute for Water Resources

*In Pembroke Pines, Fla., a group of visionaries are restoring 358 acres of highly degraded, Melaleuca-infested wetlands on city property. At the completion of the project, the city will have a revenue-producing park with canoe trails, boardwalks, and picnic areas.*

*In Lake Charles, Ill., a wetland entrepreneur is creating and restoring approximately 46 wetland acres on St. Charles Park District lands. The project will improve water quality and will provide a refuge for area wildlife which will serve as nature-study habitat for the local population.*

*In Millhaven, Ga., an investor is restoring approximately 350 acres of previously drained wetlands on private lands.*



At Pembroke Pines, Fla., 358 acres of Melaleuca-infested wetlands will be restored at the Florida Wetlandsbank. Restoration includes eradication of Melaleuca, site reengineering, and planting

*All of this activity is possible because Federal and local regulators alike have embraced a relatively new approach to wetlands regulation and management — wetland mitigation banking.*

### Background

The concept of mitigation banking, although practiced for more than 15 years, is still relatively new, and is developing along with the "no net loss" policy. In trying to find innovative solutions to problems associated with standard onsite mitigation compensation, wetland mitigation banking became an important component of the Clinton Administration's Wetland Plan, introduced in August 1993. As can be found so often with new ideas, some wetland specialists forged the beginnings by working with regulators and developing the first of the banks.

The Administration's Plan is presented in: "Protecting America's Wetlands: A Fair, Flexible, and Effective Approach," White House Office on Environmental Policy, August 24, 1993, 26 pp.

Among the initiatives in the 1993 Wetland Plan was strong support for giving incentives to state and local government to engage in watershed planning, with the intent to reduce the conflict between wetlands protection

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and development when decisions are made on a permit-by-permit basis. To encourage greater use of comprehensive planning and to identify wetland protection and restoration needs, concerns, and opportunities, the Administration gave its support to mitigation banking. As part of the August 1993 package, the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers issued joint guidance to their field staff that clarified the manner in which wetlands mitigation banking fits in the Federal wetlands regulatory program. The Administration further demonstrated its support of banking through a Federal interagency effort to develop mitigation banking guidance. That effort was led by Michael Davis, chief of the Corps' Regulatory Branch and Chair of the White House Wetlands Working Group.

In spring 1995, the concept of mitigation banking reached a major threshold when the Federal regulatory and resource agencies released proposed guidance in the March 6, 1995 *Federal Register*. Federal Mitigation Banking guidance was finalized in the November 28, 1995 *Federal Register*. The *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks* represents the consensus of five agencies: the Department of the Army/Corps of Engineers, Environmental Protection Agency, the Fish and Wildlife Service, the Natural Resources Conservation Service, and the National Marine Fisheries Service. The guidance endorses mitigation banking in support of the Administration's Wetlands Plan. Mitigation banking is defined in that guidance as:

"The restoration, creation, enhancement, and (in exceptional circumstances) preservation of wetlands and/or other aquatic resources, expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources."

In practice to date, there has been considerable variation in implementation because almost all banks established have been ad hoc arrangements between regulators and development entities. However, banks generally share the following characteristics:

- They are typically large blocks of wetlands or a suite of wetland sites with estimated tangible and intangible values termed "credits." These credits represent an increase in the function or value of the wetlands in the bank.
- As anticipated developments (e.g., industrial development, highways, etc.) take place developers use the bank for its compensatory mitigation for unavoidable wetland loss, termed "debits," if regulatory agencies permit those losses.

- A bank usually compensates for multiple wetland losses.

A mitigation bank is not like a checking account. Credits placed in deposit by a sponsor can only be spent by a user if the regulator approves the action. The "currency" of the bank must be measurable to the extent that wetland functions and values credited and debited are comparable. Owing to limitations in wetland functional assessment methodology, to date, in many cases, credits and debits have been measured simply in terms of acres of various wetland classes produced, or lost.

On the positive side, regulatory and resource agency personnel are enthusiastic about the prospects of wetland banking. Banking provides an alternative to the "postage stamp" approach typical of individual compensatory mitigation projects. Banks can produce large, ecologically superior wetland areas, since "postage-stamp" sized, on-site mitigation projects often fail. Also, mitigation for the cumulative impacts of many small wetland losses within a watershed or along a corridor is frequently more easily accomplished through a banking program.

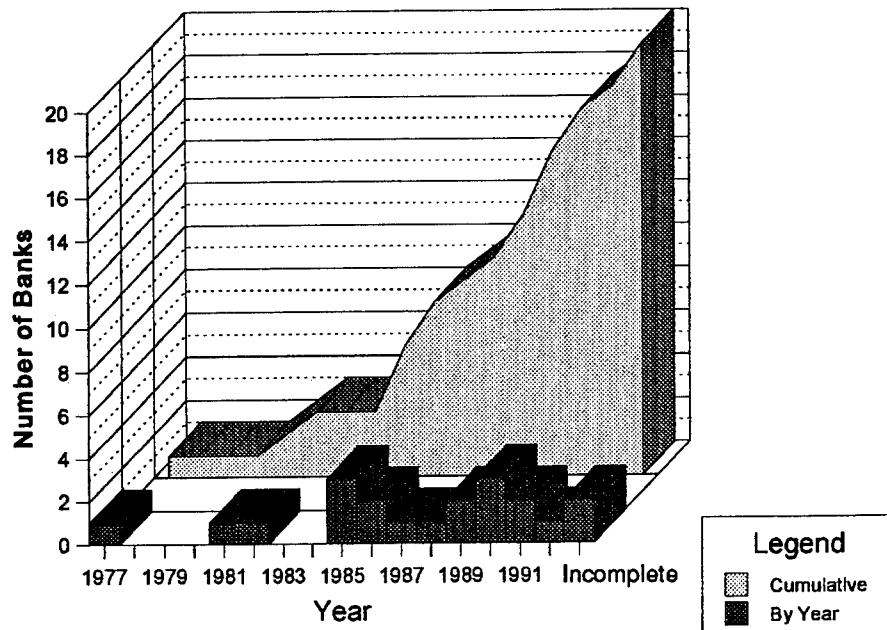
Advantages to regulatory and resource agencies also include increased efficiency of review and compliance monitoring for mitigation projects. This increase in efficiency improves the reliability of efforts to restore, enhance, or create wetlands for mitigation purposes.

The permit applicant also realizes advantages, including economy of scale, improved cost estimates, and elimination of the "double permit" process where a permit is needed for both the development project and for the wetland project. A mitigation banking approach offers an opportunity of greater economies of scale at all stages: planning, design, construction, and operation of a replacement wetland.

Finally, mitigation banking has found acceptance not only because of the benefits or characteristics cited above, but also because of the opportunities to facilitate watershed-based wetlands planning.

### **A national study on banking**

The Corps Institute for Water Resources (IWR) has been conducting a study for Corps Headquarters in an effort to better understand the concept of wetland mitigation banking and its application to the Federal wetland regulatory program. Phase 1 of the two-phase study focused on a review of mitigation banking practices to date. Results were published in six reports. Development of the Federal Guidance was based on these results. The current phase of the study, expected to be completed in 1996, focuses on commercial banking, watershed-based wetlands management, and development of technical tools to assist implementation of banking.



**Figure 1. Date of Implementation for Case Study Banks (for 20 operational banks, approximately one-half of the population in 1992)**

Findings from Phase 1 indicate that banking is very much in an exponential growth phase in terms of implementation. A majority of the more than 40 banks operating by summer 1992 existed for less than 5 years. Banked land totalled about 20,000 acres. Figure 1 graphically illustrates this rapidly expanding use. (Note: Today, probably more than a hundred banks are operating and an additional several hundred may be in the middle or latter stages of planning and design.)

The passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 has greatly spurred banking among state highway departments—just about all states are planning a program if not already implemented. Essentially, ISTEAs classified banks as highway projects in themselves, thereby making them eligible for Federal funding support.

The banks studied represented a variety of institutional arrangements. Mostly, they were single-client banks sponsored by state agencies, primarily state highway departments. Thus, the user or client is also the bank sponsor who produces the credits. A few banks

were sponsored by private companies in need of compensatory mitigation for their own development actions.

When examined individually, many of the early banks had deficiencies in implementation or in designated long-term management programs. Nevertheless, the majority of the banks were functioning, or were expected to function, as planned. Not surprising, the most

### National Wetland Mitigation Banking Study Reports

*Wetland Mitigation Banking Concepts*, IWR Report 92-WMB-1

*Wetland Mitigation Banking: Resource Document*, IWR Report 94-WMB-2, prepared by Environmental Law Institute and IWR

*Expanding Opportunities for Successful Wetland Mitigation: The Private Credit Alternative*, IWR Report 94-WMB-3, prepared by Shabman, Scodari and King  
*First Phase Report*, IWR Report 94-WMB-4

*An Examination of Wetland Programs: Opportunities for Compensatory Mitigation*, IWR Report 94-WMB-5, prepared by Apogee Research, Inc.

*Wetland Mitigation Banking*, IWR Report 94-WMB-6, prepared by the Environmental Law Institute

common reason for failure was improper design or engineering of hydrology.

As a population, these banks are successful despite planning that often failed to provide sufficient monitoring, liability, and enforcement. Within the last few years, banks generally have been established with much more specific long-term and oversight requirements. Certainly there is more up-front Corps attention or involvement than was the case for many early banks when, typically, the Corps was not involved unless a permit was needed for bank use or construction. The current Federal Guidance calls for Corps participation and leadership.

### Market-oriented approach

Until 2 or 3 years ago, very few banks provided compensatory mitigation for general development. Most permit applicants could not take advantage of banking unless they had the ability and the funds to set up a bank for their own use. The potential for large-scale infusion of private-sector provided funds was not being realized.

In the early 1990s, the Bush Administration's Domestic Policy Council (DPC) showed interest in a market-oriented approach to get the private sector involved in banking as a mechanism to achieve the "No Net Loss" wetland goal. The DPC thought that market-based banks could support wetland restoration and management in locales where public funds were in short supply, but Administration Policy was not developed until the Clinton Administration's Wetland Plan was published, also supporting a market-oriented approach.

This support was underscored by the *Joint EPA-Army Memorandum* to the field which stated that permit applicants could draw upon the available credits of a third party mitigation bank such as a bank developed and operated by an entity other than the permit applicant. Now, the Federal Guidance further supports the third-party bank concept in the statement that the bank sponsor should be made responsible for assuring the success of the mitigation bank replacement.

### Commercial banks and a watershed approach.

Commercial banks may represent, in a sense, a broader-based trading system for managing wetlands where the goal may be, for example, to maximize the ecological benefits within a watershed or regional context. Or, the goal may be to recreate the historic wetland assemblage, at least in terms of types and mix of wetland classes.

The Astoria Bank was part of a comprehensive plan for a 16-mile reach of the Columbia River, while the Bracut Marsh Bank siting was the result of state, city,

### Commercial Mitigation Banking

Banks offering compensatory mitigation credits for general use, whether sponsored by public entities or private firms, have been referred to as "commercial banks" or "credit supply ventures." Privately sponsored commercial banks are known as "entrepreneurial banks." Since 1992, numerous privately-sponsored ventures have been proposed and several implemented.

The first entrepreneurial bank was the Millhaven bank (also known as WET, Inc.) which was permitted by the Corps' Savannah District, December 1992.

In July 1993, the Florida Wetlandsbank in Pembroke Pines became the second entrepreneurial bank to be permitted. Florida Wetlandsbank has since been permitted by the South Florida Water Management District, the Broward County Department of Natural Resources Protection, and the South Broward Drainage District, in addition to the Corps.

Among the earliest publicly sponsored banks were Bracut Marsh and Astoria Airport. The Bracut Marsh Bank, sponsored by the California Coastal Conservancy, was constructed in 1981. The Astoria Airport Bank was sponsored by the Oregon Division of State Lands and was constructed in 1987.

IWR canvassed the Corps Districts in late summer 1995 to get an update on the nature and number of commercial ventures now in operation or under planning. More than 25 commercial ventures were in operation and at least 50 more were in some stage of planning.

A variation of the commercial banking theme is the fee-based credit supply venture (also referred to as in-lieu fee programs). Fees are collected from permit applicants for unavoidable wetland losses. The fees accumulate in a dedicated fund typically with no clear timetable for replacement of wetlands. Although this program is especially criticized by some in the environmental community, its infrequent implementation to date has typically been for compensation for small wetland losses, e.g., a few acres to fractions of an acre, that might otherwise have been permitted without compensation if no such credit supply program were available.

and nonprofit collaboration on a subregional restoration plan. The Bracut Marsh Bank services permits for "pocket marshes in the city of Eureka and estuaries in the Humboldt Bay area."

Within the last several years, numerous watershed-based wetland plans have, as elements, private or publicly sponsored commercial banks. Such watershed-based approaches represent an implicit move away from a rigid, onsite, in-kind preference for piece-meal compensatory

mitigation towards a broader-based trading system that takes advantage of qualitative differences among wetlands and that can use the potential economic profits from the development of some low-valued wetlands (that may be doomed in any event) to contribute to an overall "No Net Loss" and, potentially, a Net Gain in wetland function and area. Some of those who are apprehensive about offsite (and out-of-kind) mitigation may only support banking if it is implemented within a watershed-based wetland plan.

- For information on fee-based mitigation programs, see two reports prepared for the national study: *Wetland Mitigation Banking: Resource Document* prepared by the Environmental Law Institute and the Institute for Water Resources (IWR Report 94-WMB-2) and *First Phase Report* (IWR Report 94-WMB-4).
- For further information on the Bracut Marsh and Astoria Banks, see the *Wetland Mitigation Banking: Resource Document*.

The notion that banking can facilitate watershed-based wetlands planning and management raises the issue of bank site location. Certainly location is critical if the ecological potential of banking is to be realized.

Bank siting to date, especially for the single client bank, has been mostly on an opportunistic or ad hoc basis. Bank location typically has been the product of special circumstances or fairly arbitrary decisions. Mitigation banks may have been sited on land already owned by the relevant public agency or in other cases located so as to salvage the economic value of a site that could not be developed. For most early banks, site selection did not use a multiple site evaluation process or a multiple-objective plan-evaluation process. Public commercial banks and, to a lesser extent, private commercial banks have used more of a watershed-based site selection process.

### Timing of credit withdrawal issue

Among the most critical issues that affect the financial success of commercial banks, and thus the willingness on the part of the private sector to get involved in commercial banking, is the timing of debiting versus accrual of credits in the bank. Ideally, mitigation banks are constructed in advance of development projects that result in wetland losses and are seen as a way of reducing uncertainty in the wetlands replacement process. However, virtually all private commercial bank entrepre-

neurs argue that for their banking ventures to be economically viable, they need to be allowed to sell credits before replacement wetlands are fully functioning or self-maintaining. Allowing a bank to be debited before it achieves a fully functioning stage involves a trade-off between ecologic and economic risks. The later the bank may be debited (along a time continuum from planning through design, construction, and operation), the lower the ecologic risk. However, delays in allowing debiting increase the financial risk to the investor. The private sector generally needs some level of immediate return to justify the financial risk or to supplement initial funding.

Dr. Leonard Shabman discusses private sector views regarding the issue of timing of credit withdrawal in more detail in *Expanding Opportunities for Successful Wetland Mitigation: The Private Credit Alternative*, IWR Report 94-WMB-3.

It must be remembered that the market for the supply of commercial compensatory mitigation is regulated. Accordingly, the demand for this product or service is highly uncertain. Every modification of wetland regulations changes the demand for credits. Completely revamped wetland regulations may actually jeopardize a commercial venture. Wetland regulations can expand and contract in terms of jurisdiction or flexibility. The market or demand for compensatory mitigation credits will expand and contract also, affecting financial success of commercial credit supply ventures. The hypothetical relationship between ecological and economic risks is illustrated in Figure 2.

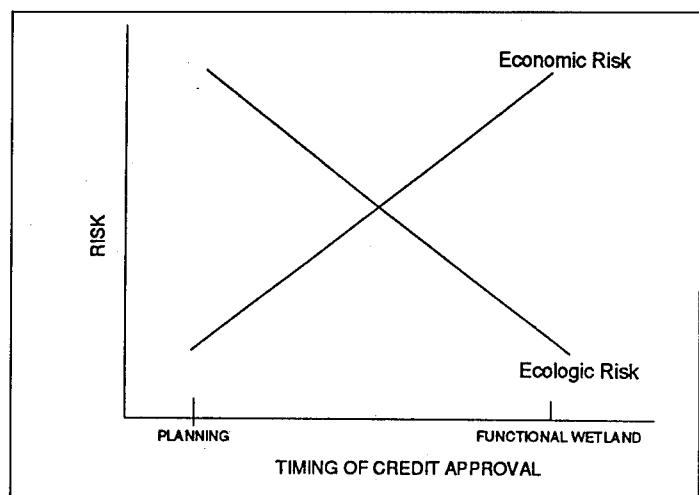


Figure 2. Timing of Credit Approval and Apportionment of Risk: A Hypothetical Trade-off

Private commercial banks implemented to date reflect the value of time. Regulators have allowed debiting (generally to a limited extent) shortly after bank construction, during construction, or even shortly before construction, if there was an approved site plan and appropriate real estate arrangements and financial assurances (such as funds for remedial work, if needed, and for long-term management).

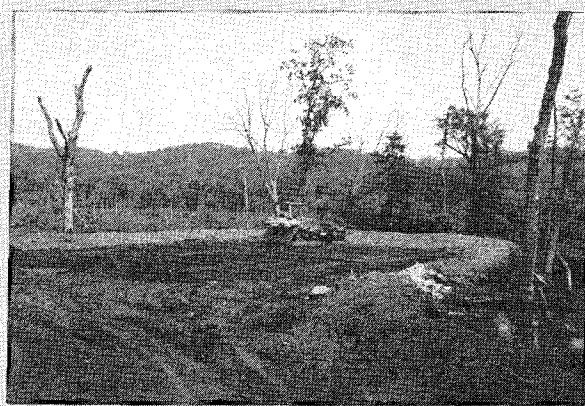
For example, the Interagency agreement between the Corps' Chicago District, EPA, and the Fish and Wildlife Service (FWS) contains staged debiting and associated financial assurance criteria. The umbrella agreement, which serves as guidance to banks that are implemented within the Chicago District, allows up to 30 percent of the total expected credit capacity to be debited (released for sale) upon approval of a banking instrument (charter) and prior to the construction of replacement wetlands. These credits must be backed with surety bonds (or equivalent) equal to the estimated cost of generating conditionally certified credits. An additional 20 percent of credits can be transferred to permit applicants (sold) when the hydrology is established, and another 20 percent when planting is complete. The final 30 percent of the expected credits can be made available for use upon conditional certification of credits. Once the wetland credits have been conditionally certified (as on a trend towards success), the surety bond amounts can be reduced commensurate to the reduced level of risk.

Existing private commercial ventures generally include similar (to the Chicago District umbrella agreement) types of standards for the timing of credit use and types of financial assurance conditions mandated by regulators to minimize the risk of ecological failure.

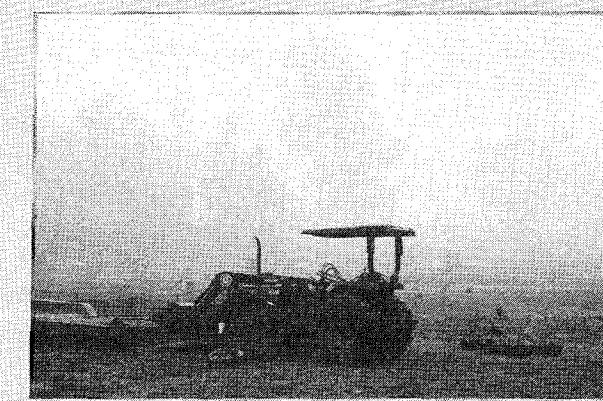
The first private commercial mitigation bank, the Millhaven Bank (WET, Inc.), can sell one-half of the total expected mitigation credits generated for a particular mitigation parcel when construction and planting is complete for that parcel (and a preliminary determination of sufficient hydrology is made). In addition, the commercial venture must record a restrictive deed covenant on the parcels and obtain financial assurances. The venture must then show within 3 years that the parcel satisfies wetland delineation criteria relating to hydrology, soils, and vegetation before the remaining credits can be sold.

The Millhaven venture obtained an irrevocable letter of credit to fulfill its assurance requirement. The Corps permit called for the reduction of the financial assurance in stages commensurate with the level of ecological risk reduction.

### **Julie J. Metz Wetlands Mitigation Bank**



**Grading to elevation at the Julie Metz Bank, on the Neabsco Creek, Va., with sediment and erosion controls in place**



**Beginning of the planting phase of the Julie J. Metz Wetlands Bank on Neabsco Creek, northern Virginia, one of the first entrepreneurial banks**



**Julie J. Metz Wetlands Management Mitigation Bank will have a mosaic of palustrine forest, shrub-scrub emergent wetland, and upland habitat. The bank is dedicated in honor of Julie J. Metz, a Corps biologist who co-chaired the staff-level effort to develop the Federal banking guidance and who recently passed away from cancer at the age 38.**

## Evaluation of functions: Another issue

Credit/debit evaluation is currently limited by technical deficiencies in measurement of wetland functions. Current assessment methods are varied in their capability to accurately and quantitatively assess individual functions, with the result that some functions may be emphasized simply because they can be evaluated, e.g., fish and wildlife habitat. Banks present the need and opportunity to consider multiple functions. However, even the more advanced assessment methods are primarily limited to looking at individual functions.

In a paper presented at the National Interagency Workshop on Wetlands sponsored by the U.S. Army Engineer Waterways Experiment Station (WES) in April 1995 in New Orleans, Dr. L. Jean O'Neil and Julie Metz (see sidebar) pointed out that an inherent difficulty for credit and debit assessment is the size differential between a bank and most wetland loss sites. Further, the probability increases that the replacement wetland will include nonwetland cover types which confound a credit evaluation for wetland functions. (See the June 1995 *Wetland Research Program Bulletin* Vol. 5, No. 2, for a discussion of that workshop (on-line at <http://www.wes.army.mil/EL/wrtc/bulletins/v5n2/v5n2.html>).

A method under development at WES should aid bank credit and debit evaluation. Its shell is the "Hydrogeomorphic Classification," which helps to identify important functions by wetland type, per hydrogeomorphic setting, by region. Functional capacity indices are under development as part of the overall methodology. An article in the Oct. 1994 *Wetlands Research Program Bulletin*, Vol. 4, No. 3, describes the hydrogeomorphic approach (on-line at <http://www.wes.army.mil/EL/wrtc/bulletins/v4n3/v4n3.html>).

## The future

The guidance affirms Federal agencies' strong support of mitigation banking as an opportunity for achieving the President's Wetlands Plan. Guiding principles of that plan are:

- To streamline wetlands permitting and provide greater predictability to applicants;
- To increase cooperation with private landowners to protect and restore wetlands on their property;
- To base wetlands policy and decisionmaking on good science and sound judgment; and
- To increase participation by state, tribal, and local governments as well as by the public in wetlands protection.

As Davis points out in his article in the July-August 1995 *National Wetlands Newsletter* (Vol. 17, No. 4) "A More Effective and Flexible Section 404," when properly implemented, wetland mitigation banking can serve as a compensatory mitigation tool that benefits the aquatic environment and provides landowners flexibility in meeting permit requirements.

Approximately 130 letters were received that commented on the proposed guidance. Some of the more difficult issues the agencies had to resolve, in addition to timing of credit withdrawals discussed above, were the nature of Corps leadership and other Federal agency roles in bank planning (and development of a banking instrument) and operation.

The Federal mitigation banking guidance clarifies the manner in which wetlands mitigation banks may be established and used to satisfy mitigation requirements of the Clean Water Act, Section 404 permit program, and the wetland conservation provision of the Food Security Act (i.e., "Swampbuster" provision). The purpose of providing guidance to the field-operating activities of involved agencies was to achieve consistency in decision-making on mitigation banking.

## Policy guidance emerges

The policy for mitigation banking endorses the following:

- Fully supports and encourages mitigation banking in the private sectors.
- Endorses a watershed approach for integrating mitigation banking goals and objectives with local needs.
- Maintains mitigation sequencing, in which impacts must be first avoided and minimized before bank credits can be used as compensatory mitigation. Consistent with existing practice, banks may only be used when onsite mitigation is not practicable or when use of the bank is environmentally preferable to onsite mitigation. The guidance indicates that, for many small impacts, use of the bank may generally be environmentally preferable to onsite mitigation. Moreover, when deciding between onsite mitigation versus use of a bank, consideration should be given to the likelihood of success, the compatibility with adjacent land use, the practicability of long-term monitoring and maintenance, and the relative costs of mitigation alternatives.
- Indicates that banks should generally be in place and functional before credits may be used to offset wetland losses. However, the guidance also acknowledges that it may be appropriate to allow a limited number of credits to be withdrawn before construction occurs to ensure the financial viability of the

bank. The guidance basically indicates that the decision as to the appropriateness of allowing debits of projected credits (and the amount) should be made on a case-by-case basis after considering the initial capital cost of the project and the likelihood for success.

- Indicates that all banks need to have a written banking instrument (interagency) that describes, in detail, criteria to guide the establishment, use, and operation of the bank and serves as documentation of agency concurrence on the objectives and administration of the bank. The Corps of Engineers, or Natural Resources Conservation Service, as appropriate, will chair a "Mitigation Banking Review Team (MBRT)" consisting of signatory agencies to the banking instrument. The MBRT's primary role is to facilitate the establishment of the banks through the development of mitigation banking instruments. The sponsor is responsible for preparing the banking instrument in consultation with the MBRT. The Chair of the MBRT (e.g., the Corps) will make final decisions regarding terms and conditions of the banking instrument where consensus cannot otherwise be reached within a reasonable timeframe. Consistent with its authorities under Section 404/10, the Corps remains responsible for authorizing use of a particular bank on a project-specific basis.

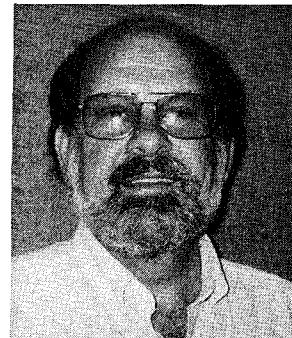
Other issues addressed in the guidance include use of preservation of existing wetlands, wetland buffers, public participation, siting on public lands, bank service area, and monitoring requirements. IWR is assisting a staff-level Federal Interagency Working Group to prepare technical materials that will support the policy guidance. A model banking instrument is among these products.

While the guidance is specific on key policy issues at the national level, flexibility has been maintained to allow field-operating activities latitude in interpreting the guidance to address regional needs and interests.

However, despite the support of the Administration and encouragement provided by the Federal Guidance, the future of banking practices, like that of the individual entrepreneurial banker, is one of uncertainty—not so much as uncertainty as a viable concept, but rather the uncertainty about the extent of the program. This uncertainty is largely the product of possible Congressional directives. Both the U.S. House of Representatives (HR 961) and Senate (S 851) have Clean Water Act reauthorizing legislation that could affect the demand for mitigation in a number of ways.

Additional information is available from Robert Brumbaugh at (703) 355-3069.

*Robert Brumbaugh is a policy analyst with the U.S. Army Corps of Engineers Institute for Water Resources (IWR) Policy and Special Studies Division, in Alexandria, Virginia. He received his B.A. and M.A. in Geography from the University of Arizona and a Ph.D. from the University of California at Los Angeles where his studies focused on fluvial geomorphology, plant ecology, and paleoenvironmental analysis. He has been with the Corps for thirteen years, seven years in the Los Angeles District as a water resources planning study manager and the last six years at IWR where his focus has included water resources management during drought, Middle East water resources, and watershed planning. He is the manager of the National Wetland Mitigation Banking Study.*



## Professional Meetings

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### **Wetlands '96: Forming Fair and Effective Partnerships**

The Association of State Wetland Managers issued its 1996 symposium call for papers. The symposium will be held July 9-12, 1996, at the Key Bridge Marriott Hotel in Washington, D.C. A workshop, computer fair, and training session: Improving Communication and Analysis: Wetland Floodplain and River On-line Services and GIS applications will be conducted

July 10-12. Abstracts of 200-300 words for the Wetlands '96 workshop were due to the Association of State Wetland Managers, P.O. Box 269, Berne, NY 12023-9745 in February 1996. Additional information is available by calling (518) 872-1804; FAX (518) 872-2171.

### **Washington State announces wetlands conference**

The Washington State Department of Transportation and co-sponsors are presenting a national conference on balancing the protection of wetlands and wildlife with escalating transportation needs and costs. The 3-day conference will take place in Seattle, Wa., in September or October 1996, and will include presentations, a poster session, panel discussions, and vendor displays. The conference will focus on biological issues associ-

ated with the delivery of transportation programs and cost-effective environmental mitigation. Abstracts were due February 1996. Additional information may be obtained from Judy Stratton at telephone (360) 705-7490; FAX (360) 705-6833; e-mail Stratton@wsdot.wa.gov. More information may also be found at web site: <http://www.wsdot.wa.gov/eesc/environmental/wetlands.htm>.

## People in the News

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### **WRTC personnel changes announced**

WRTC organizational changes have taken effect October 1, 1995. The following personnel have left the WRTC:

Richard Coleman, Task Area Manager for Inter-agency Coordination for the WRP, has moved to a position as Assistant to the Chief, Ecological Research Division. His WRTC functions, including the Wetlands Regulatory Assistance Program, have been assumed by WRTC's Glenn Rhett, telephone (601) 634-3717, FAX (601) 634-3664, e-mail: [rhettr@ex1.wes.army.mil](mailto:rhettr@ex1.wes.army.mil).

Elke Briuer, Task Area Manager for Technology Transfer for the WRP has moved to the Environmental Information Analysis Center. WRTC/WRP requests concerning displays should be addressed to Glenn Rhett, telephone (601) 634-3717, FAX (601) 634-3664. All other requests should be directed to (601) 634-4058 (WRTC Secretary), Ext. 4217 (Hotline), or Ext. 2733 (WRTC Director); FAX (601) 634-3664; e-mail: [therior@ex1.wes.army.mil](mailto:therior@ex1.wes.army.mil).

# WRTC Activities

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## WRTC FY95 training program showed growth: More expected for FY96

Sponsored by Headquarters, U.S. Army Corps of Engineers, in conjunction with the U.S. Army Engineer Training Division, the WRTC conducted national wetland training and workshops for 600 Corps, U.S. Air Force, U.S. Army National Guard Bureau, and other Federal and state agency personnel. Twenty-eight weeks of wetland training and workshops were conducted in scientific and technical areas of wetland delineation, fundamentals, evaluation techniques, functions and values, restoration and development, mitigation, executive development, and environmental compliance.

For FY96, 30 weeks of wetland training and workshops are scheduled for approximately 650 personnel. A new course, titled "Constructed Wetlands" is planned for San Francisco, Calif., 15-19 July 1996. FY96 course titles, locations, dates, and a Huntsville Training Division point of contact are as follows:

**Fundamentals of Wetlands:** This course provides students with an overview of state-of-the-art knowledge of wetland flora and fauna, hydrology, soils, and ecology. The course emphasizes wetlands functions and values from an ecosystem perspective. Salt-, brackish-, and fresh-water wetlands are addressed. An introduction and overview of basic wetland concepts and principles in the context of planning and operating civil works environmental restoration and mitigation projects are provided. In addition, the course serves to update students in wetland science and ecology of the 1990s. Session locations and dates:

Session 96-01 Apalachicola, FL	4-8 Mar 1996
Session 96-02 Olympia, WA	5-9 Aug 1996
Session 96-03 Apalachicola, FL	11-15 Mar 1996

Huntsville Division Point of Contact: Mr. John Buckley  
(205) 722-5898 FAX (205) 722-5888

**Wetland Evaluation Methods:** An in-depth introduction to and overview of existing wetland evaluation procedures is provided in the course. Case study applications to wetland systems for environmental impact assessment

and evaluation purposes are included. Methods to identify and evaluate the functions of wetlands and their corresponding values to the ecosystem and to society will be discussed. The requirements for wetlands evaluation and justification during project planning, operations, and natural resources management phases of the civil works program will be stressed. Session location and dates:

Session 96-01 Apalachicola, FL	26 Feb-1 Mar 1996
Huntsville Division Point of Contact:	Mr. John Buckley (205) 722-5898 FAX (205) 722-5898

**Wetland Development and Restoration:** This introductory specialized training on concepts and practices of wetland restoration and development in both freshwater and coastal areas is directed towards biologists and engineers concerned with wetlands mitigation and seagrass development and techniques for reducing engineering impacts. Practical, hands-on field application of state-of-the-science is stressed. Session locations and dates:

Session 96-01 Apalachicola, FL	15-19 April 1996
Session 96-02 Tiburon, CA	6-10 May 1996
Session 96-03 Alton, IL	17-21 June 1996
Session 96-04 Alton, IL	24-28 June 1996
Session 96-05 Duck, NC	3-8 June 1996

Huntsville Division Point of Contact: Mrs. Janie Hughes  
(205) 722-5828 FAX (205) 722-5888

**Constructed Wetlands:** This training provides state-of-the-science technical knowledge on how to construct wetlands from the planning, design, engineering, construction, operations and maintenance, and monitoring aspect for civil works projects. Session location and dates:

Session 96-01 San Francisco, CA	July 15-19, 1996
Huntsville Division Point of Contact:	Mr. John Buckley (205) 722-5898 FAX (205) 722-5898

(Information provided by Robert L. Lazor, WRTC National Wetlands Training Program Coordinator)

### The Black Swamp to be available across the nation from ETV stations

On March 31, 1996, Arkansas Education Television Network, through an official public broadcasting distribution system, will make the film *The Black Swamp* available to all public television stations in the contiguous United States. This 55-minute program features the U.S. Army Engineer Waterways Experiment Station Wetlands Research Program "Cache River Study."

*The Black Swamp* is a film about this forested wetland of worldwide significance (Ramsar Site) in northeastern Arkansas and the secrets it has yielded to scientific knowledge about such ecosystems. Viewers can see stunningly beautiful swamp scenery through the four seasons and learn about the swamp from the scientists, at work in the field and in the laboratory, as they explain their studies and how the research results impact on our knowledge about forested wetlands.

Anyone interested in seeing the program should contact the program manager of their State's educational television station and request that *The Black Swamp* be added to their programming at a time suitable for family viewing.

This film is suitable for educational purposes, and program managers who decide to download the material will be able to place a copy into their distribution library and copy it for education and nonprofit organizations at a reasonable cost. (Note: **Educational distribution rights are cleared**). Audiences will respond positively to this fast-paced and versatile film because:

- In all regions of the United States, children and adults can learn about the beauty and value of Southern forested wetlands.
- The film is useful to young people (K-12) curious about career options since it shows scientists, student assistants, and technicians at work.
- The film is informative for college/university programs about wetlands and ecosystems with applications in biology, geography, chemistry, hydrology, engineering, and more. The study at the Cache River, Ark., is one of the largest multidiscipline ecosystem studies about bottomland hardwood wetlands in the United States. Research results are already being used in new studies. The research design has the potential to serve as a model for future ecosystem/watershed studies around the world.
- The film is a unique mix of outstanding cinematography depicting science, recreation, local color, resource management, conservation, and more.

### Interagency Research Coordination Conference held at WES

The U.S. Army Engineer Waterways Experiment Station hosted the 19th Annual Interagency Research Coordination Conference October 17-19, 1995, in Vicksburg, Miss. Participating agencies included the Corps of Engineers, Tennessee Valley Authority, U.S. Bureau of Reclamation, and the Department of Energy's Bonneville Power Administration and the Western Area Power Administration. These agencies have primary responsibility within the Federal community for water resource, flood control and power development.

The purpose of the conference was to review and examine current and planned research of member agencies to detect and eliminate duplication, foster interchange of research results, and identify areas of mutu-

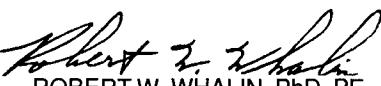
ally needed research. To accomplish this, the 19th conference was organized into four broad program areas: Water and Watersheds, Environmental Assets, Infrastructure, and Innovative Ideas. A total of 319 Research Topic Statements were submitted within these broad areas for discussion by the participants.

A follow-up initiative by the Conference Executive Committee is to place conference results onto the World Wide Web.

(Ed. Note: Look for the material at <http://www.wes.army.mil> under Environmental Laboratory, Technology Transfer documents. The projected publishing date is April 1996.)



The Wetlands Research Program **Bulletin**, the information exchange bulletin of the U.S. Army Corps of Engineers Wetlands Research Program, is published in accordance with Army Regulation 25-30 to provide information concerning the Corps' wetlands research and development. The contents of this bulletin are not to be used for advertising, publication, or promotional purposes nor are they to be published without proper credit. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products. (WES Internet address: <http://www.wes.army.mil/>) Address communications to Elke Briuer, CEWES-EP-W, U.S. Army Engineer Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, e-mail address [briuere@ex1.wes.army.mil](mailto:briuere@ex1.wes.army.mil).

  
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